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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/666,371 | 09/20/2000 | Davi Geiger | 24147.00 | 6163 |

21003 7590 07/19/2004

BAKER & BOTTS
30 ROCKEFELLER PLAZA
NEW YORK, NY 10112

EXAMINER

ABDULSELAM, ABBAS I

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

2674

DATE MAILED: 07/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

14

Office Action Summary

Application No.

09/666,371

Applicant(s)

GEIGER ET AL.

Examiner

Abbas I Abdulsalam

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-14, 34, 36 and 38-40 is/are allowed.
- 6) ☒ Claim(s) 15-19, 35 and 37 is/are rejected.
- 7) ☒ Claim(s) 20-33 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 16.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see # 16 filed 04/16/04, with respect to the rejection(s) of claim(s) 15-19, 35 and 37 under U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Malzbender et al. (USPN 6278459) and Cox (USPN 5170440).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 15-19, 35 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Malzbender et al (USPN 6278459). and Cox (USPN 5170440).

Regarding claims 15, 35, and 37, Malzbender et al. teaches volume rendering software and algorithms (col. 7, lines 52-55), and a memory system for storing the three-dimensional image as a three-dimensional data array including object data values associated with a plurality of sample points in a three-dimensional space. Malzbender discloses a circuit (30) with a bus interface (32), which communicates to the computer's main bus to receive voxel block data (notably a color data for each sample point in object space, which can be in a compressed format). See col. 2, lines 23-25, col. 3, lines 60-67, col. 4, lines 1-4 and Fig. 1B.

Malzbender does not teach “first information indicative of a likelihood of an association of the first data with at least a first part of the respective point, second information indicative of a likelihood of an association of the second data with at least a second part of the respective point, and associating the first and second points to the respective first and second information”.

Cox on the other hand teaches use of probabilistic data association either to partition edge points into disjoint sets, each representing a contour in the image scene or to partition discrete intensity points into disjoint regions of constant or prescribed variation, intensity. See col. 2, lines 55-60. Cox teaches

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Malzbender's data processing to adapt Cox's probabilistic data association. One would have been motivated in view of the suggestion in Cox that the probabilistic data association can be equivalently utilized to achieve the desired likelihood of associations among points and data values. The use of probabilistic data association helps function an algorithm for data processing as taught by Cox.

Furthermore, Cox teaches the data association technique with respect to algorithms carried out in a programmed computer (see the abstract and Fig. 1). It would have been obvious to utilize the programmed computer to achieve the desired modules.

Regarding claims 16-17, Malzbender teaches the use of the object data values in terms of voxel colors and weights colors (see the abstract).

Regarding claims 18-19, Cox teaches the use of Bayesian hypothesis tree whose leaf with the largest probability would represent the most likely set of data associations. See col. 3, lines 12-21.

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Allowable Subject Matter

3. Claims 20-33 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

4. Claims 1-14, 34, 36, and 38-40 are allowed.

5. Any inquiry concerning this communication or earlier communication from the examiner should be directed to **Abbas Abduselam** whose telephone number is **(703) 305-8591**. The examiner can normally be reached on Monday through Friday (9:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Richard Hjerpe**, can be reached at **(703) 305-4709**.

Any response to this action should be mailed to:

Commissioner of patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314

Hand delivered responses should be brought to Crystal Park II, Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology center 2600 customer Service office whose telephone number is **(703) 306-0377**.

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Abbas Abdulsalam

Examiner

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July 6, 2004


XIAO WU
PRIMARY EXAMINER